SECTION 6.0

Refinement of Preferred Terminal Concept

6.0 REFINEMENT OF PREFERRED TERMINAL CONCEPT

6.1 INTRODUCTION

This section provides a discussion of the refinements made to the preferred terminal concept (Option 4C) identified in Section 5.0. The refinement process was conducted on the basis of feedback received from airport management and other stakeholders including members of the study's Advisory Committee. An important element of the refinement process was the identification of terminal building materials and appearance. This section describes the refinement process and the preferred terminal concept.

6.2 TERMINAL BUILDING DRAWINGS

6.2.1 FLOOR PLAN REFINEMENTS

Figure 6-1 illustrates the ground-level floor plan of the preferred terminal concept. Refinements have been made throughout the plan and are described in the following paragraphs.

A building utility "core" has been developed near the center of the building. The placement of the core in this location ensures that it would not become an obstruction to any future expansions of baggage claim, passenger screening areas, or airline operations.

The core would house rooms containing the building's major mechanical, electrical, and fire protection utilities. By virtue of its central location, the core would facilitate efficient distribution of services throughout all areas of the building. It is located below a roof area where roof-top heating, ventilation, and air conditioning (HVAC) units could be mounted. This would enable convenient connections between interior and exterior HVAC equipment.

The utility core would also contain a janitor's closet, storage rooms, and an office for maintenance personnel. To facilitate deliveries and quick access to the surrounding site, the core has a doorway leading directly to the building exterior. The core also provides a direct connection to airport administrative offices.

The ticketing and baggage screening areas were re-arranged to allow direct access to each Airline Ticket Office (ATO) from the ticket counter area. The baggage make-up area was modified to allow a "drive-through" operation of tugs/carts in the outbound make-up room (rather than "back-in" operation as in previous drawings). A revised conveyor path and bag screening room have been developed in response to the revised make-up and ATO configurations and an office has been added to serve "Ramp Operations." Depending upon tenant needs, the ramp operation office could be combined with the smaller ATO to provide two ticketing offices of roughly equal size.

The United Service Organization (USO) room has been re-located from the south wall of the terminal building (near baggage claim) to the front (curbside) wall. In this new location, any future expansion of baggage claim would not require re-location of the USO. Furthermore, the sculptural form of the USO room will add architectural interest to the front wall of the terminal building.

The meditation room has also been moved to the front (curbside) wall of the terminal. As with the USO, the meditation room brings architectural interest to the terminal facade. This new location also separates this noise-sensitive room from the potential noise generated by the restrooms and rental car counters.

The number of vestibules at the front of the building was reduced to three from the previously shown four. Three vestibules are adequate to serve the needs of the terminal for the foreseeable future. The overall building area of the revised floor plan increased to 38,297 square feet from 36,320 square feet previously shown on Option 4C. The increase in floor area is attributable to increases in the size of the departure holdroom, ATO, Transportation Security Administration (TSA) screening, and the lobby area.

6.2.2 SOLAR ORIENTATION AND VIEWS

Figure 6-2 indicates the path of the sun relative to the building floor plan. Two days of the year are indicated: winter solstice and summer solstice. These days represent the range of solar exposure the building would experience through the course of a year. It is important to consider the solar path when developing the exterior walls of the building because glazing features are sensitive to solar heat gain and glare. This drawing also indicates the direction of desirable "views." The green arrow from the back of the terminal emphasizes the view to the aircraft apron from the building interior. This view makes the interesting activities surrounding the aircraft visible from the building interior. The green arrow in the public parking lot indicates the view from the parking lot/curbside into the building interior. This view offers a hint of what's inside to people approaching the terminal from the landside.

Figure 6-2 indicates that the proposed passenger terminal will receive a great deal of solar exposure on the sides of the building where openings are desirable for views. This suggests a need for solar protection strategies such as large roof overhangs or vertical light baffles at openings on the east and west walls of the building. It is also apparent that with the long width of the building at the central lobby and the desirability of glazing at the east and west walls, it is likely that the lobby would be perceived as dark unless daylight can be introduced through skylight features in the center of the lobby.

6.2.3 BUILDING FORM AND APPEARANCE – CONCEPT DESIGN

A "concept design" was developed to assist in understanding the building volume and associated building systems (e.g., mechanical, electrical, structural, and construction materials). The concept design represents only one of many possible ways to develop the volumes and materials of the terminal building. The concept design is not intended as a final design, but it is useful as an aid to understanding development requirements and features of the project. The concept design is shown in **Figure 6-3**.

The Airport's name (as shown in Figure 6-3 and subsequent figures) has been indicated as Wichita Falls Regional Airport instead of Wichita Falls Municipal Airport. It is the intent of airport management to change the Airport's name when a new passenger terminal is constructed. The new name will better reflect the fact that SPS serves passengers located beyond the City's limits.

The front (curbside) wall of the building would be the first impression a passenger has when approaching the building from the landside. This side of the building has an important role in representing the community in a formal way. The front (curbside) wall is developed as a uniform straight glass wall which runs the entire length of building. This uniformity gives the wall a civic character, but within the overall uniformity individual "pavilions" containing entry vestibules, the USO room and the meditation room are arranged in a less formal way. The shapes and orientations of the pavilions are varied and curved thereby introducing a sense of movement across the front of the building.

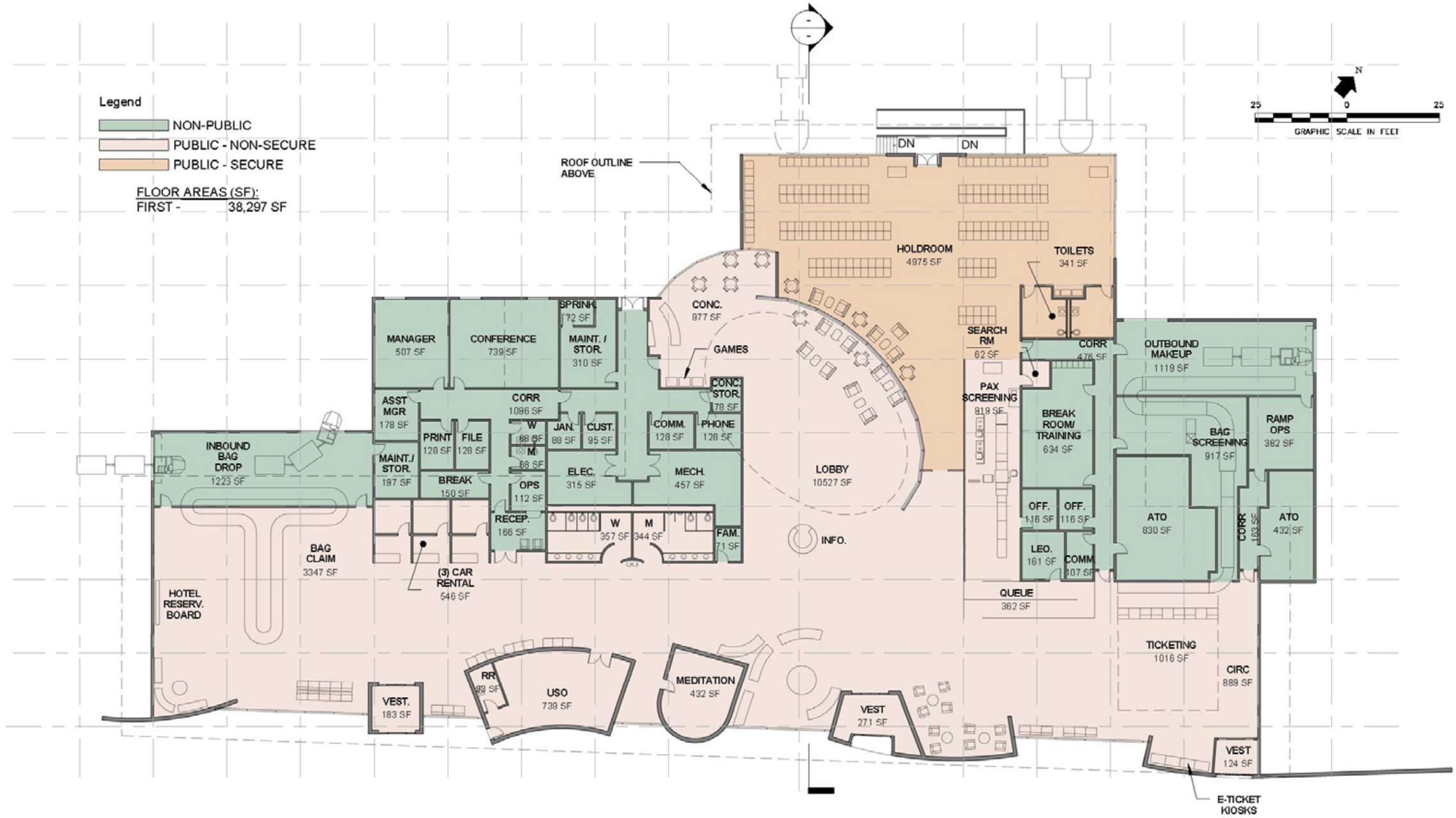


FIGURE 6-1
GROUND FLOOR PLAN

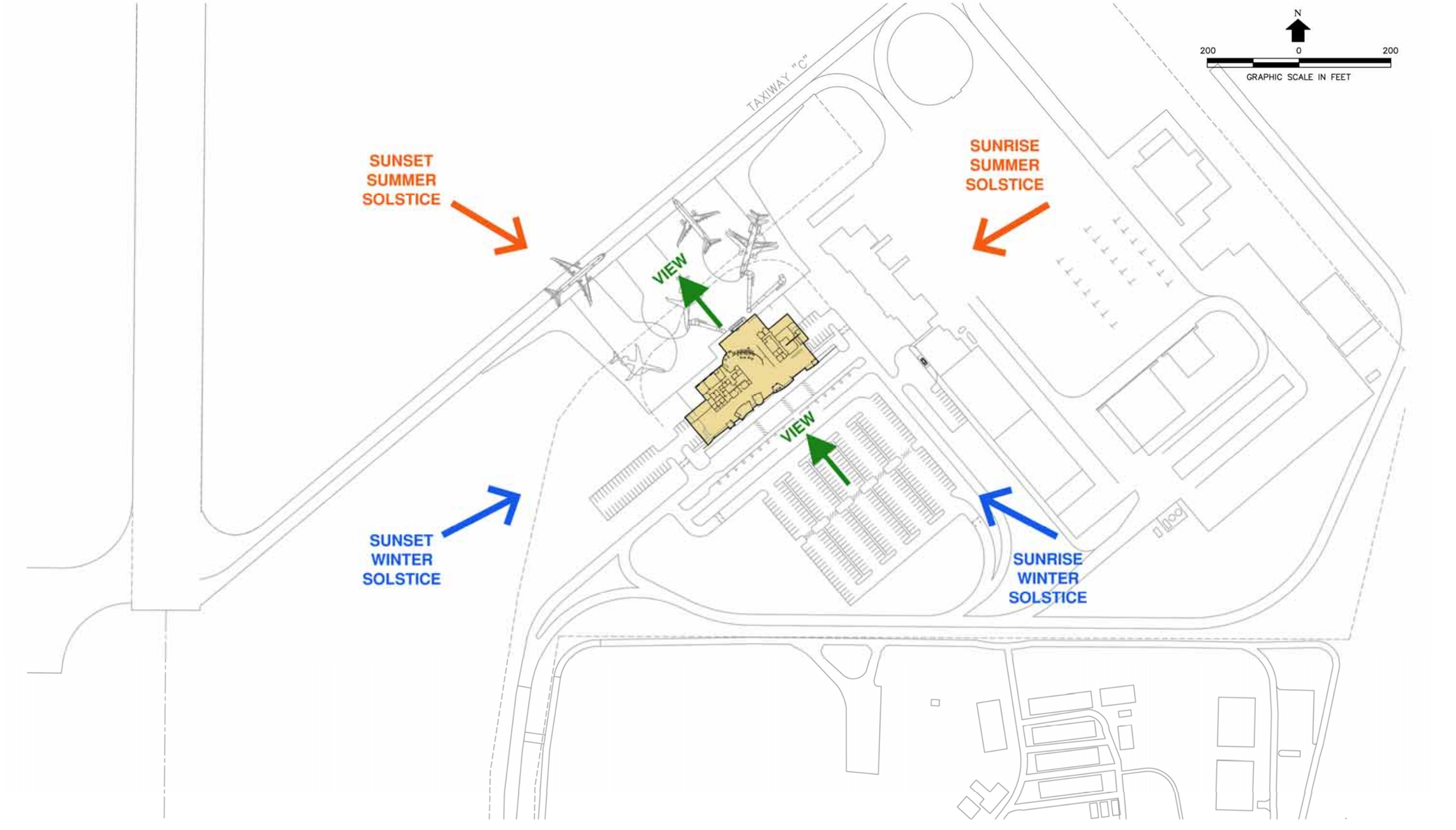


FIGURE 6-2
SUN AND VIEWS

FIGURE 6-3
CONCEPT DESIGN

The roof form is a very simple flat roof (see **Figure 6-4**). This is an efficient structural approach which offers cost advantages. Uniformity of the building mass is emphasized by the straight roof edge that reinforces the civic character of the building. A wood soffit slopes downward from the outboard edge of the roof to inside the building interior. The portion of the soffit inside the building would be visible from the outside emphasizing a sense of transparency at the front of the building.

A large skylight is positioned near the center of the lobby to convey daylight into the central lobby (see **Figure 6-5**). The flat roof allows for maximum flexibility in placement and orientation of the skylight so that it can be optimized based on solar angles and lobby conditions. The skylight at the central lobby is oriented to due north which is the optimal orientation for reducing solar heat gain and glare. The skylight is developed as a curved form rising above the flat roof; modest in scale but still visible from the parking lot and approach roads. When viewed from the building exterior, the skylight marks the location of the central lobby in an interesting way (see **Figure 6-6**). The meditation room is expressed as a curved form rising above the edge of the roof and acts as a counterpoint to the skylight feature.

The glazed separation wall between the holdroom and the central lobby (see **Figure 6-7**) is an extension of the skylight glazing above. This skylight/separation wall becomes an interesting design feature. Artwork could be incorporated into the flooring under the skylight.

A continuous flat suspended ceiling would be installed throughout public areas of the terminal. The ceiling cavity would be used as a return air plenum minimizing ductwork costs and the continuous cavity would make it easy to route and conceal HVAC equipment, sprinkler pipes, electrical conduit, and other utilities above the main lobbies. Future additions of cable, conduit, and other utilities are also facilitated by having a continuous ceiling cavity.

The terminal's front (curbside) walls would be clad with stone masonry. Use of a locally quarried stone would lend a regional expression to the building's main facade. Exterior walls at the meditation room and skylight would be finished with metal wall panels. The terminals other exterior walls would be composed of concrete block or glass storefront systems (see **Figures 6-8 and 6-9**).

6.3 ROADWAY AND PARKING PLANS

Figure 6-10 illustrates the site plan of the preferred terminal concept. The following refinements were made to the plan: the parking stalls and drive-aisles of the main parking lot were re-oriented at a 90-degree angle to their previous orientation and the entry drive has been moved farther south (toward the Sheppard Medical Readiness Facility) to allow more parking spaces in the public parking lot. The exit drive was straightened to allow additional rental car parking on the southwest side of the passenger terminal. Finally, an additional employee parking lot was placed northeast of the terminal.

6.3.1 ROADWAYS

The preferred terminal concept provides a loop entrance roadway similar to the existing roadway system. However, unlike the existing roadway, a portion of the proposed roadway would accommodate two-way traffic to allow fuel trucks and some general aviation users to enter and exit the Airport without having to drive past the passenger terminal. The site plan provides two options for accommodating this traffic. The first option is a short connecting road from the loop access road to the fuel farm. The second option, which is envisioned as a longer-term improvement, is to provide a road that would be routed along the perimeter of the City's leasehold and would provide access to the existing rental car wash facility, existing hangars on the northeast side of the apron, and any future hangars that are constructed along the existing apron.

Once the loop roadway passes the exit to the fuel farm, the roadway would become one-way and would continue past the Landmark Aviation hangars and administration building to the proposed passenger terminal. Access to Landmark Aviation could occur directly from the loop road. Sufficient space exists for a drive-through area adjacent to what is currently the rear of the Fixed Base Operator (FBO) building. This location would work well if a new entrance is provided from the rear of the FBO. Adjacent to this entrance is an additional parking area dedicated to FBO employees and visitors.

The loop roadway turns 90 degrees past Landmark Aviation and then passes by the front of the proposed passenger terminal in a straight alignment that connects back to the entrance road. Vehicles that need to return to parking after dropping off a passenger could use a connector roadway that ties back into the loop roadway. Access to public parking and short-term parking is provided directly from the loop roadway.

6.3.2 PARKING

Table 6-1 provides a comparison of the parking facilities contained in the preferred terminal concept to existing parking facilities and the parking requirements identified in Section 4.0. The table reveals that the preferred concept provides more parking spaces due to the greater number of spaces provided for rental car "ready/return" and "storage" functions. The preferred terminal concept provides space inside the terminal for three rental car companies. Consequently, it was determined that the number of parking spaces for both rental car functions should be increased to support the operation of an additional rental car company. Rental car "ready/return" spaces were increased to 12, thereby providing each company with four spaces. Rental car "storage" spaces were increased to 90 which will provide each company with 30 storage spaces. These changes result in rental car parking increasing to 102 spaces, from the current 48 spaces.

TABLE 6-1
PARKING FACILITIES AND SPACES

Category	Existing	Facility Requirements	Preferred Terminal Concept
Public – Long-Term	187	281	282
Public – Short-Term	8	25	26
Employee[1]	36	36	43
Rental Car Ready	8	8	12
Rental Car Storage[2]	80	80	90
Total	**319**	**430**	**453**

Notes: [1] The existing employee lot contains 76 spaces. However, 40 of those spaces are reserved for rental car storage. The lot also accommodates overflow public parking at peak periods.
[2] Forty of the 80 rental car storage spaces are located in the lot along the portion of Armstrong Drive exiting from the passenger terminal. The other 40 spaces are located in the employee/overflow lot.
Source: URS Corporation, 2010.

FIGURE 6-4
AERIAL VIEW

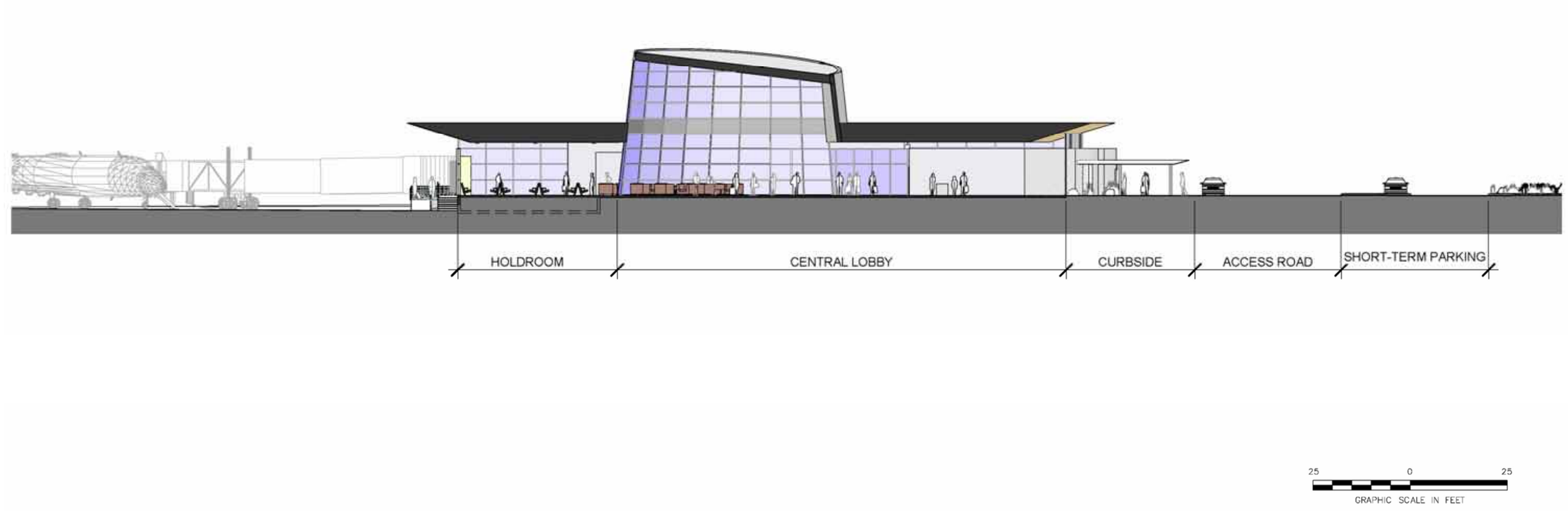
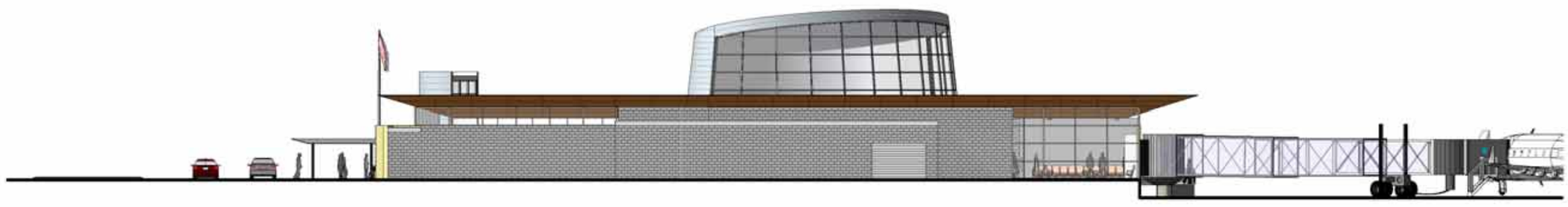


FIGURE 6-5
BUILDING SECTION

FIGURE 6-6
FRONT FACADE RENDERING

FIGURE 6-7
INTERIOR RENDERING

SOUTH ELEVATION



EAST ELEVATION

25 0 25

GRAPHIC SCALE IN FEET

FIGURE 6-8
BUILDING ELEVATIONS

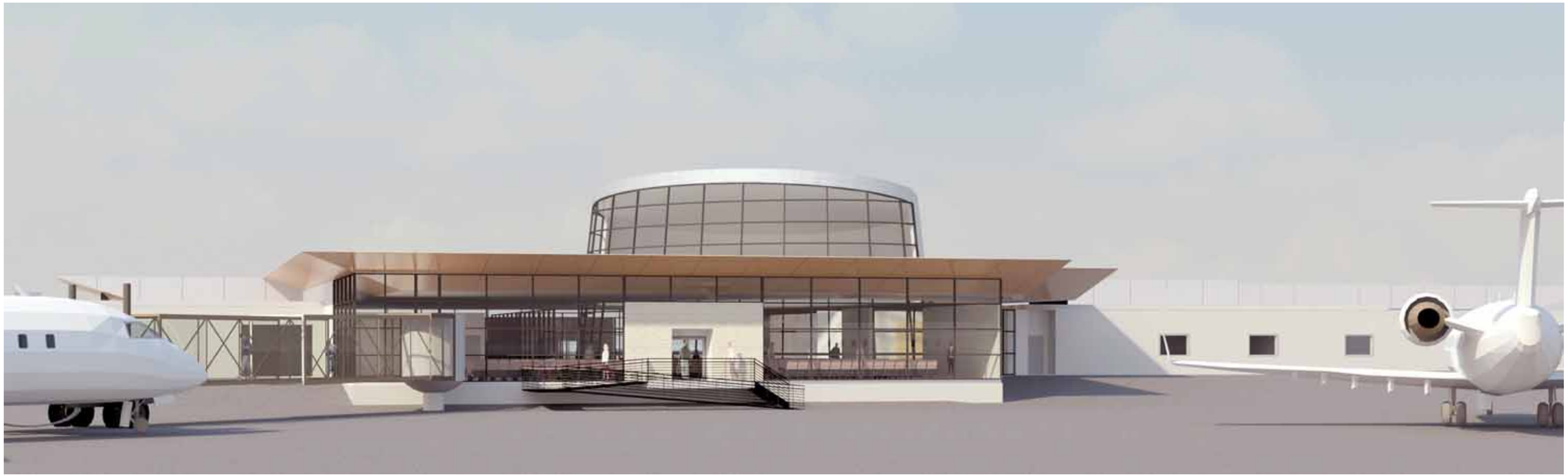


FIGURE 6-9
AIRSIDE FACADE RENDERING

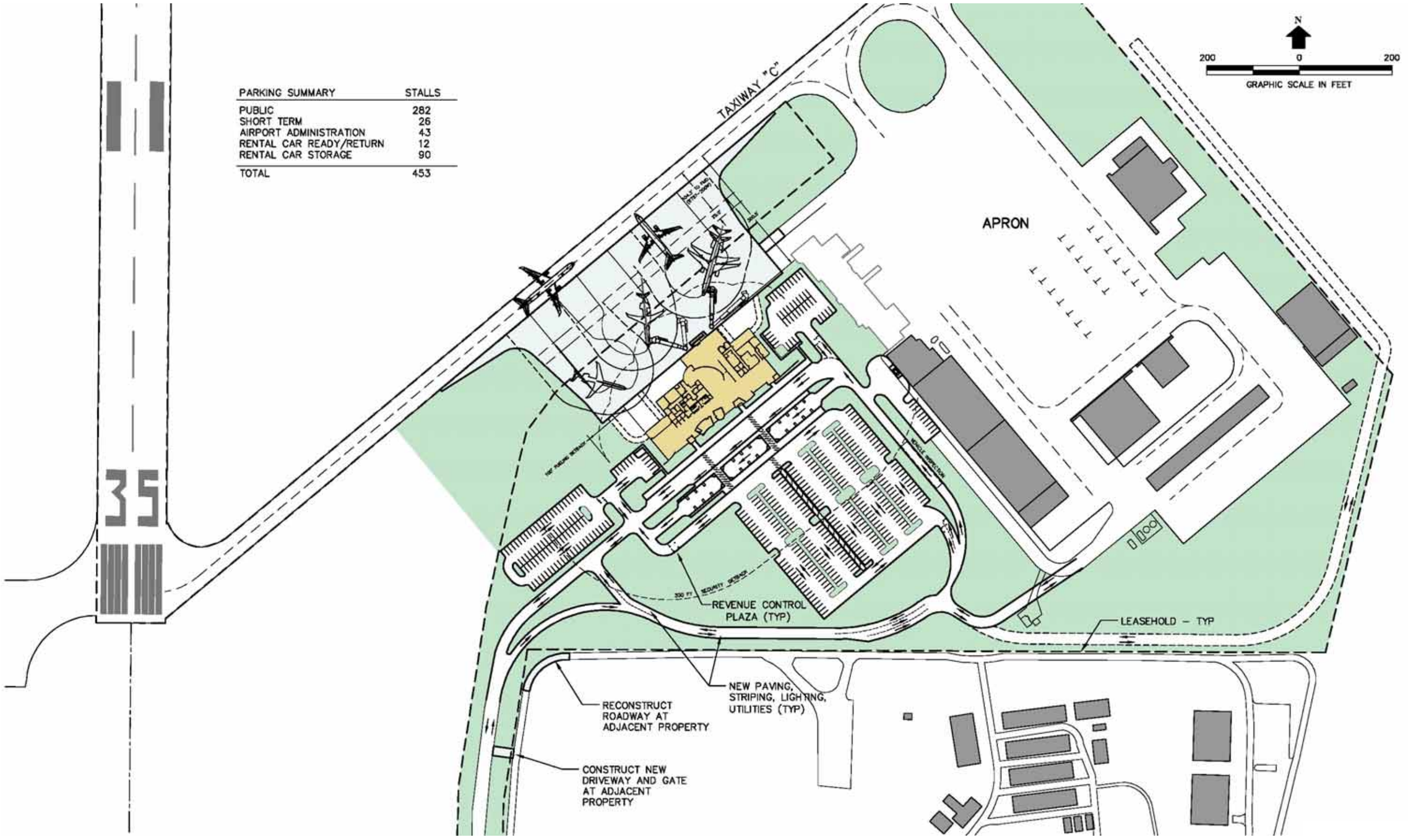


FIGURE 6-10
SITE PLAN

The preferred terminal concept provides 43 spaces for employee parking. This is less than the 76 spaces provided in the current employee parking lot. However, the existing employee parking lot also serves as overflow public parking and as backup rental car storage. Neither of these functions will need to be accommodated in the employee lot with preferred terminal concept. Therefore, 42 spaces should be sufficient to meet the need of terminal employees.

The number of parking spaces provided for public parking (282 spaces) and short-term parking (26 spaces) essentially matches the facility requirements identified in Section 4.0. Access to all parking lots is provided directly from the loop access road. Entry into and out of public parking and employee parking would be controlled via gates. Access to and from short-term parking would be uncontrolled. These spaces would have parking meters similar to the existing short-term parking spaces.

6.4 REVIEW OF STORMWATER DRAINAGE REQUIREMENTS

The preferred terminal concept would be constructed over the existing public parking lot located southwest of the existing terminal. The existing public parking lot is mostly paved with the exception of a few grassed islands with landscaping. The drainage system serving the public parking lot consists of a system of inlets and pipes that convey stormwater runoff to a ditch off-site to the east.

With construction of the proposed terminal concept over the existing parking lots and access roads, the existing drainage system would have to be modified. Existing inlets, pipes, and ditches would have to be relocated to accommodate the proposed terminal, parking areas, and access roadway drainage. The final location of the proposed drainage system would depend on the final building locations and grading plan.

A significant increase of impervious area is not anticipated because the preferred terminal concept would be constructed over existing parking lot and access road pavement areas. The U.S. Environmental Protection Agency (USEPA) has delegated permitting authority for the state of Texas to regulate the National Pollutant Discharge Elimination System (NPDES) by the Texas Commission on Environmental Quality (TCEQ) under the Texas Pollutant Discharge Elimination System (TPDES). Consideration should be given to providing swale and/or pond areas for stormwater management with clear access for maintenance.

6.5 REVIEW OF WASTEWATER INFRASTRUCTURE REQUIREMENTS

This section provides a brief description of utility planning and conceptual modifications to the sanitary sewer collection system. The overall goal for the sewering of the new terminal is to establish a reliable centralized system for the proper and efficient disposal of all sanitary wastewater that may be generated at new restroom facilities, as well as any wastewater that could potentially be generated by other types of facilities such as restaurant or food vending stations within the new airport terminal. (If a restaurant is established within the terminal, provisions would be required to include an Oil & Grease [O&G] separator on the sewer lateral serving the restaurant. This specific provision was not included or accounted for in this section describing the wastewater collection infrastructure.)

Since wastewater collection for facilities within the existing terminal as well as the various aircraft maintenance hangers that are adjacent to the existing terminal must be maintained during construction of the new terminal, it will be important to maintain sewer service to those facilities. Once the existing terminal is officially closed and decommissioned, the sewer service laterals that route wastewater from the bathrooms within it would be cut, capped, and plugged leaving intact the remaining sewer system that would continue to serve the hangars. Therefore, the planning effort takes into account not only new sewer infrastructure that would be needed to support the new terminal, but also the existing sewer infrastructure that must be maintained during and after the construction of the new terminal is complete.

During the initial master planning effort, consideration was given to using as much of the existing wastewater infrastructure that supports existing facilities where possible and practical thereby minimizing construction costs associated with this component. While the existing sanitary sewer collection system, or a portion of it, could potentially be used to support new development, other portions may need to be relocated, abandoned, or demolished. In the latter case, the relocation and/or changes to existing sewer components must be performed in such a manner to maintain service to existing facilities, while the new terminal is under construction. Therefore, staging of specific construction activities should be taken into account during the relocation of the sanitary wastewater infrastructure associated with this project as presented in the conceptual plan described below. In addition, any new facilities that must be served by the existing wastewater collection system must be identified so that they can be properly integrated into the existing system.

Based on a preliminary review of the preferred terminal concept, URS developed two conceptual gravity sewer configurations to address the sewer needs of new facilities as well as the relocation and upgrades to existing sewer infrastructure (please refer to **Appendix B** for a description of these configurations). These configurations would need to be further evaluated during the formal engineering design phase in order to select a preferred configuration which would at that time be illustrated and described in a set of formal construction plans and technical specifications.

Regardless of the exact sewer configuration that is developed and constructed for this project, URS confirmed that the wastewater collection system is owned and operated by the City of Wichita and all wastewater that is generated at the municipal airport is routed directly to the City's wastewater treatment facility located at 1005 River Road. Coordination with the City's Public Works/Public Utilities Department should occur during the final engineering design of the terminal's new sewer system and final connection requirements should also be verified at that time.

6.6 PHASING PLANS

The ability to construct the new terminal, apron, roadways, and parking in a manner that allows operations at the existing terminal to continue and minimizes disruption to existing tenants and passengers is an important factor. It is anticipated that construction would be accomplished in three major phases as described in the following paragraphs. Additional sub-phases would likely be required to account for temporary roadway re-routings, etc.

6.6.1 PHASE 1

A large, undeveloped area located southeast of the existing public parking lot would be the main area of activity in Phase 1 (see **Figure 6-11)**. The new terminal access drive and most of the new public parking lot would be constructed during this phase. Much of the construction activities in this area would be isolated from on-going operations of the terminal and adjacent airport users, but it would impact the existing employee/overflow parking lot and the existing entrance to the fuel farm and some hangars. Sub-phasing would be required to keep these areas operational until new facilities could replace existing ones. The existing public parking lot, access roads, exit roads, and terminal building/apron would all remain operational without any significant impacts from construction activities.

6.6.2 PHASE 2

The area currently occupied by the public parking lot would be the main area of activity in Phase 2 (see **Figure 6-12).** The new terminal building, aircraft apron, rental car parking, short-term parking, and new terminal curbside would be constructed in this area. The access road completed in Phase 1 would be used to provide all ground access to the existing terminal building. Phased construction of the new terminal curbside drive and short-term parking area would provide for egress of vehicles from the existing terminal.

6.6.3 PHASE 3

After completion of Phase 2 the new terminal building, apron, access roads, and parking lot would all be operational (see **Figure 6-13)**. The existing terminal building and driveway would be decommissioned. A new employee parking lot would be constructed and the site area adjacent to the existing terminal would be renovated. All work on the new terminal complex would be complete at the end of Phase 3.

6.7 REFINED COST ESTIMATE

Cost estimates were prepared for the preferred terminal concept with the refinements described in this section. The estimates include construction costs and program cost and were prepared using 2009 dollars. No inflation factor was applied.

Unit costs (square foot costs) were derived from bid prices from similar airport projects, historical bid data, quotes from local contractors performing this type of work, and publications such as R.S. Means cost data. Program costs include design fees, construction management, change order contingency, design services during construction, geotechnical fees, and surveying fees. The resulting total program cost for the preferred terminal concept is $30,260,000. The details of this cost estimate are presented in **Appendix C**.

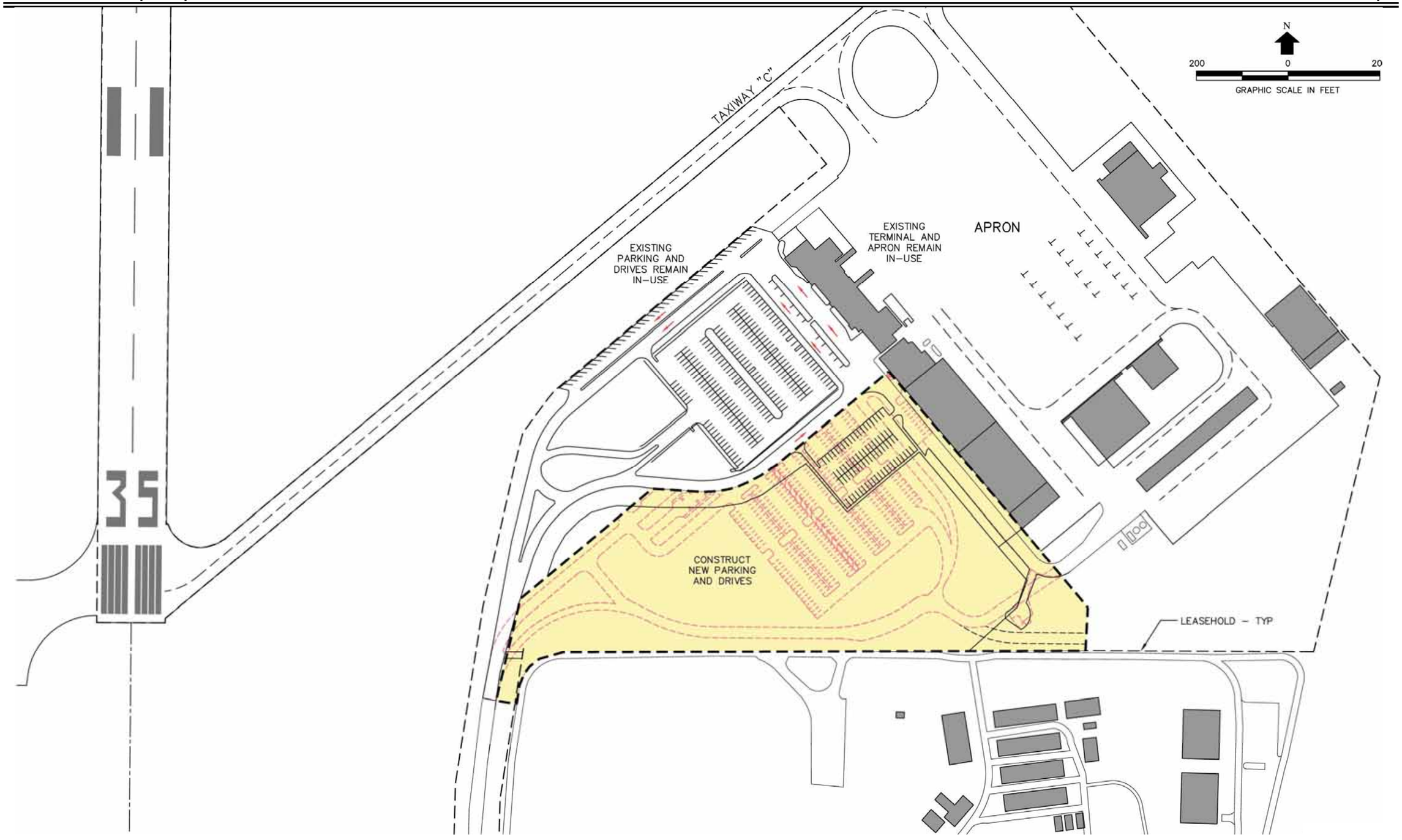


FIGURE 6-11
PHASE 1

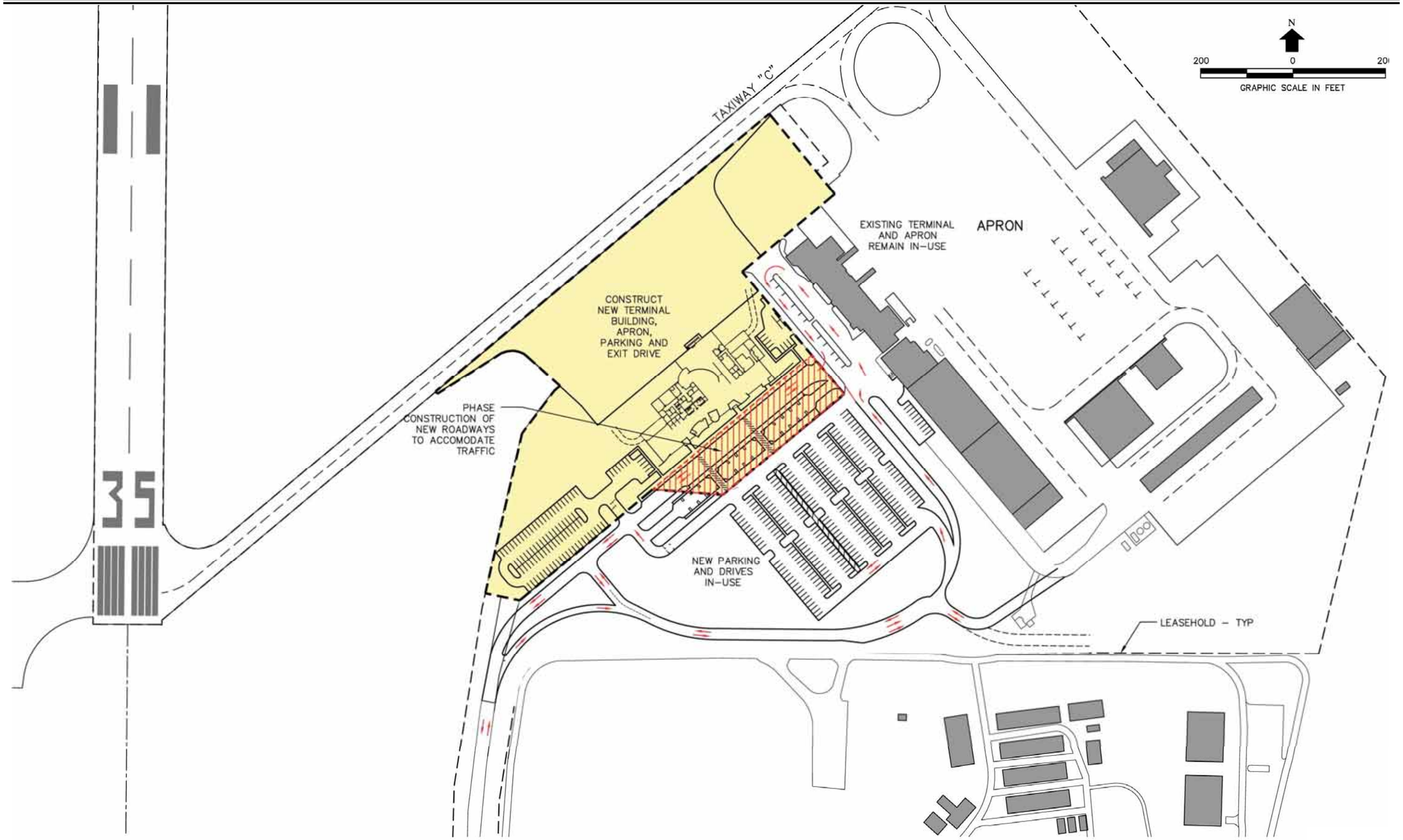


FIGURE 6-12
PHASE 2

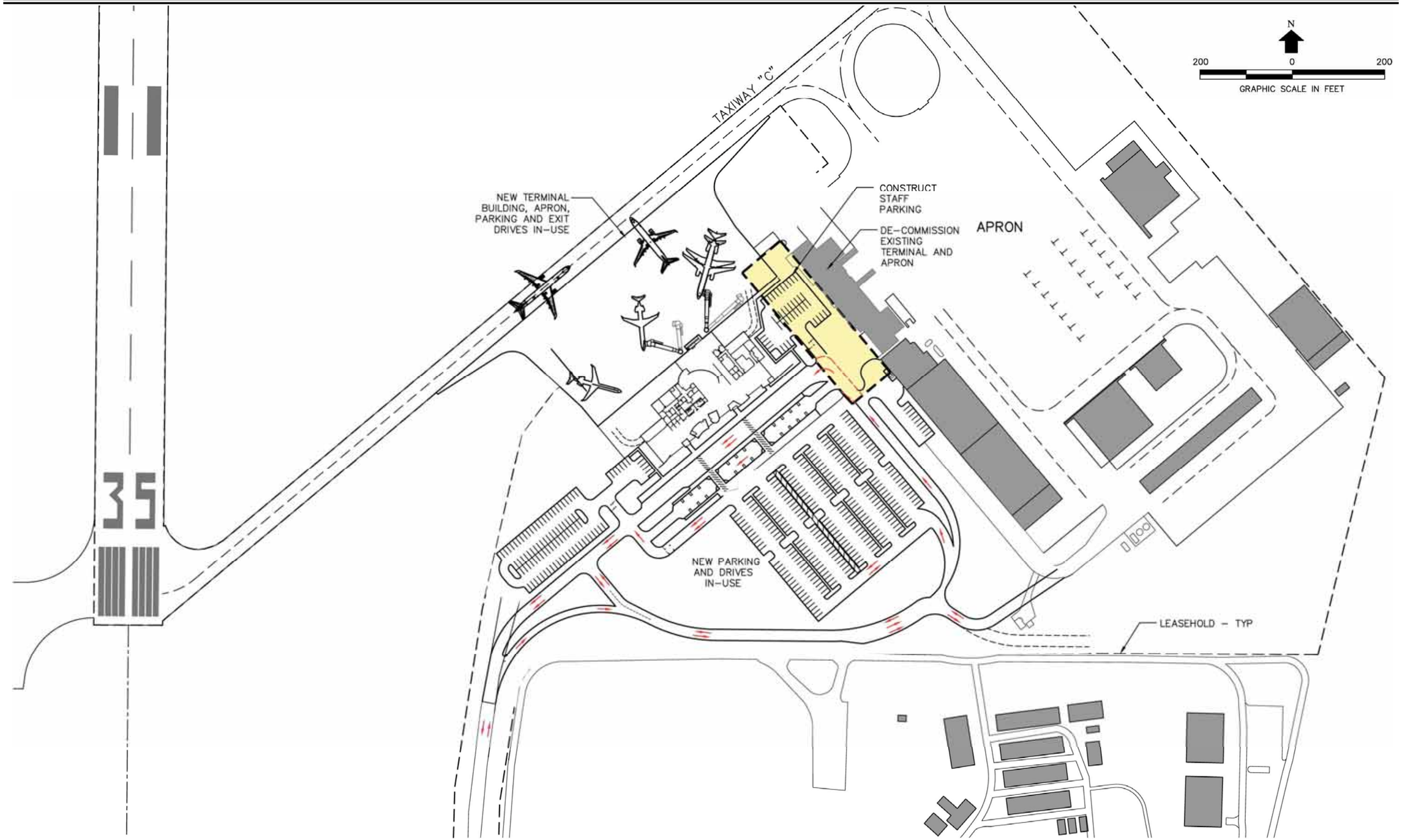


FIGURE 6-13
PHASE 3

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